Perception of Teachers Regarding Gaps in Student Competencies for Industrial and Farmers' Needs

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ABSTRACT

This study was designed to describe the gap between the existing and desired competencies of the agricultural graduates as perceived by the teachers. A survey of active and continuously enrolled undergraduates and post-graduate students was conducted. Data for the study were collected by providing them with a questionnaire. The findings of the study revealed that the teachers' perception of the competencies as existing and desired in the UG students was ordered in descending manner viz. communication/ICT, entrepreneurial, extension skills, personal, managerial, market/understanding government policy, and technical competency. While in the case of PG students, the teachers ordered the competencies as important in the desired status were communication/ICT, entrepreneurial, extension skills, managerial, personal, market/understanding government policy, and technical competency. The majority of the teachers agreed that the lack of staff was one of the major factors affecting their fair evaluation of the students along with the overburdening of various other universities' works entrusted upon them. Recommendations include teachers should be assigned jobs concerning the schemes and mandates viz. teaching, research, and extension so that they can justify their scheme. The teachers in the teaching scheme should have the prime responsibility of building competencies among the students.

INTRODUCTION

The agricultural sector requires skilled human resources who are capable of all aspects of work in agricultural and rural centres, including producing, processing, and marketing agricultural products. Universities and higher education institutes in agriculture usually respond to prepare the main part of specialists, researchers, extension workers, and farmers (Anonymous, 1997). Agricultural Education programs nationwide are challenged with producing well-prepared, career-oriented, and competent graduates for the agricultural workforce. Agriculture education is confined to agricultural research, extension, and agribusiness and an obligation with full social responsibility. There is a widespread consensus that the quality of education is declining and the quality of graduates is far short of expectations in terms of competency and self-

employment (Challa and Reddy, 2008). Agricultural education has to be made more practical and rural realities oriented while agricultural extension courses should be tuned to serve the needs of the rural community through dynamic interaction with rural societies (Abrol and Johri, 2005). In addition, the absence of much-needed linkages and communication between employers and the agricultural higher education system has created a situation, where it is difficult for universities to identify which specific skills and competencies are not only expected but needed from their employers (Zamani and Azizi, 2006; Hosseini et al., 2008). Students had little intention of venturing into self-employment, whereas teachers indicated that none of their graduates had established an enterprise (Lekang et al., 2016) which is sufficient indication towards competencies. Competencies can be understood as characteristics of persons, teams, work units, or organizations that

enable them to attain desired achievements (Mulder, 2001). These embody the ability to transfer skills and knowledge to new situations within the occupational area (Burke, 1990). In the holistic idea, competency is considered as a dynamic group of qualities (knowledge, ability, skills) that should be combined, coordinated, and integrated in such a way as to enable workers to efficiently carry out the tasks that make up their professional activity (Tippelt and Amoros, 2003). The emphasis placed on competency-based education in all areas of education has received much recognition and support from all educational programs. Agricultural and extension educators first initiated research in competency-based approaches in areas such as agriculture, animal production, and adult education and subsequently in extension education (Oladele et al., 2011; Demenongu et al., 2015; Adisa, 2015). The effectiveness of the educational programs of agriculture and extension depends on the competence of its staff (Ibrahim, 2011). The program cannot succeed without competent, well-qualified personnel available to conduct those educational programs (Harris, 1995; Adhikary, 2006; Bowden, 2008). However, not many studies had been conducted previously to determine the competencies needed in agricultural graduates and how these competencies could be integrated into an agricultural education curriculum. Keeping this in mind, the study was undertaken with the sole objective to assess the gaps in the higher agricultural education competencies among the students for industrial and farmers' needs as perceived by the teachers.

METHODOLOGY

The study was conducted in Punjab Agricultural University, Ludhiana, and its constituent colleges. The study was comprised of 70 teachers selected randomly from the Punjab Agricultural University as its respondents for in-depth probing and understanding of their views regarding the higher agricultural education competencies possessed by the students. A descriptive research study was used to determine the higher agricultural education competencies of the university agricultural graduates and post-graduates in the state of Punjab about the farmers and industrial needs. The data were collected by distributing the questionnaire among the teachers. Proper precautions were taken to ensure unbiased response and confidentiality of the respondents by providing them necessary instructions after explaining the objectives of the study. Z-test was used to find out the significance of difference of the existing status and desired status of the competencies as perceived by the students.

RESULTS AND DISCUSSION

The results in Table 1 indicated a high desired status mean ($TM = 3.942$) as compared to the existing status ($TM = 2.465$). From the results, communication/ICT ($M = 4.190$), entrepreneurial ($M = 4.142$), extension skills ($M = 4.060$), personal ($M = 3.986$), managerial ($M = 3.995$), market/understanding government policy ($M = 3.662$) and technical competency ($M = 3.561$) were ranked in descending order. The data in Table 1 indicate that the teachers perceive communication to be the most important ones that need to be developed among the present scenario of higher agricultural education. The desired status calculated mean (4.190) was higher than the overall total mean of the desired status ($TM = 3.942$) which suggested that the teachers emphasized more on its development. On discussions with teachers, it was found that they felt that students lack severely in speaking as well as writing skills. The advent of the internet has also decreased their creativity in expressing themselves in situations that are hampering them from raising points when required. The more time spent on social media by the students was considered to be one of the main factors leading to a decrease in the students' competency of interaction. The entrepreneurial competency was found to be the second most important desired competency. The results showed that the teachers wanted students to develop entrepreneurial skills so that they can help themselves along with farmers. But doing this will require entrepreneurial skills such as technical knowledge and skill in the venture to be established, ability to conduct effective market research in a particular venture, risk management skills in a particular venture, resource management ability in a particular venture, knowledge, and understanding of the current and future government policies in a particular venture, negotiating/bargaining skills and identification and evaluation of market opportunities. However, Lekang et al., (2017) reported that no significant differences were perceived

Table 1. Teachers perception of existing and desired higher agricultural education competencies of UG students

S.No.	Competencies	ES(M)	ES(SD)	R*	DS(M)	DS(SD)	R*	M*	Z - Score
1.	Personal	2.471	0.7237	4	3.986	0.6097	4	1.515	-8.039**
	Leadership	2.488	0.5570	P 4	4.028	0.4572	P 4	1.54	
	Team Spirit	2.228	0.9352	P 5	4.242	0.9844	P 1	2.014	
	Professionalism / Work Ethics	2.365	0.5975	P 2	4.165	0.3806	P 2	1.8	
	Multi-tasking	2.935	0.8293	P 1	3.436	0.6911	P 5	0.501	
	Problem Solving	2.343	0.6996	P 3	4.057	0.5353	P 3	1.714	
2.	Extension Skills	2.414	0.6239	5	4.060	0.4553	3	1.646	-21.572**
3.	Communication / ICT	2.524	0.6583	3	4.190	0.3831	1	1.666	-18.095**
4.	Technical	2.967	0.3634	1	3.561	0.4709	7	0.594	-8.038**
5.	Managerial	2.295	0.4932	6	3.995	0.5398	5	1.7	-30.178**
6.	Market / Understanding Government Policy	2.052	0.5996	7	3.662	0.3992	6	1.61	-3.218**
7.	Entrepreneurial	2.532	0.5548	2	4.142	0.3937	2	1.61	-23.146**
	Total Mean	2.465			3.942				

R=Ranking of the competencies according to the calculated mean. M*= Mean difference calculated by the desired status mean – existing status mean, ES=Existing Status, DS=Desired Status, M=Mean, SD=Standard Deviation*

entrepreneurial skills, entrepreneurial competencies and entrepreneurship education stages in relation to all the teachers' personal characteristics and in overall the curriculum was not been able to lure graduates in to self-employment.

The extension skills were ranked fifth based on the calculated existing status mean ($M = 2.414$) while it was placed at third rank in the desired status of the higher agricultural competencies with a mean ($M = 4.060$). The teachers mentioned that the UG students were not fully versed in the extension skills required to disseminate information from lab to land. During the discussions, they mentioned that the students need to be competent in skills such as building rapport with farmers, identifying opinion leaders for an extension programme, planning and conducting of extension programme, dissemination of technologies, formation of a farmers group, etc. The personal competency with a mean of 3.986 and standard deviation of 0.6097 was found to occupy the fourth rank in the desired status of higher agricultural competencies. There was found to be no change in the rank of the personal competency as it was placed at fourth rank in the existing status as well with a mean of 2.471 and standard deviation of 0.7237. But it's interesting to notice that there was a significant difference between the existing status and desired status of the competency. Under the personal competency, the teachers mentioned that the students need to develop a good team spirit among them while most of them have more of an individualistic approach. The competency of working in a team was placed at first rank among the personal competencies.

The development of professionalism/work ethics was found to occupy the second position under the personal competency in the desired status. The teachers mentioned that the UG students usually have a casual approach to life as well as studies. They need to develop work ethics in terms of delivering work in accordance with the deadlines, avoid giving presentations without preparation, develop a sense of responsibility in completing their work, etc. Similarly, the problem-solving skills, leadership skills and multi-tasking skills under the personal competencies were found to acquire third, fourth and fifth position in the desired status against their third, fourth and first position in the existing status respectively. The managerial competency of the UG students was found to

acquire the fifth position ($M = 3.995$; $SD = 0.5398$) under the desired status against the sixth position ($M = 2.295$; $SD = 0.4932$) in the existing status. The teachers mentioned that with the changing demand of the farmers and industries under the influence of depleting resources in the personal scenario, the students must develop good management skills. They should be able to properly look at managing resources on the farms as well as in the industries and reduce the cost incurred on production to cultivate the maximum profit out of their venture. The market competency was found to acquire the sixth position ($M = 3.662$; $SD = 0.3992$) under the desired status of the higher agricultural competencies in the UG students. The teachers mentioned that the students need to update themselves regularly with the knowledge and understanding for markets for agricultural commodities, knowledge for basic accounting skills (e.g. balance sheets, income statements, cost-benefit analysis, profit and loss etc.), various sources where crop market information such as market places, prices of various crops in different markets, etc. is available and about price support policies and government subsidies on various inputs in the agriculture sector. They need to develop this competency because farmers lack information regarding various markets inputs and whenever the students visit the farmers on the fields, these are the major questions that are usually asked the students. The last or the seventh position was acquired by the technical competency ($M = 3.561$; $SD = 0.4709$). The placement of the technical competency by the teachers revealed that they considered the UG students to be competent enough about farmers and industrial needs. They mentioned that the students were having sufficient technical knowledge according to the UG level and their competency increases with their experience in the field and industries during their jobs.

Along with the UG students the teachers were also asked to score the existing and desired status of the PG students on their higher agricultural education competencies about farmers and industrial needs which included students from M.Sc. and Ph.D. To a surprise, the communication/ICT competency was found to be at the first rank in the desired status of the PG students like that of the UG students which indicated that the PG students also needed to work and develop their communication skills. From the

Table 2. Teachers perception of existing and desired higher agricultural education competencies of PG students

S.No.	Competencies	ES(M)	ES(SD)	R*	DS(M)	DS(SD)	R*	M*	Z - Score
1.	Personal	3.039	0.6040	5	4.109	0.5348	5	1.07	-13.163**
	Leadership	3.031	0.4953	P 3	4.286	0.4512	P 3	1.255	
	Team Spirit	3.128	0.9155	P 1	4.414	0.6017	P 1	1.286	
	Professionalism / Work Ethics	3.117	0.4687	P 2	4.246	0.4371	P 4	1.129	
	Multi-tasking	2.893	0.5767	P 5	3.3	0.6103	P 5	0.407	
	Problem Solving	3.028	0.5639	P 4	4.3	0.5736	P 2	1.272	
2.	Extension Skills	2.992	0.4944	6	4.243	0.4423	3	1.251	-22.968**
3.	Communication / ICT	3.124	0.5565	3	4.395	0.4515	1	1.271	-12.729**
4.	Technical	3.196	0.4296	1	3.717	0.3922	7	0.521	-13.841**
5.	Managerial	3.052	0.4562	4	4.2	0.4829	4	1.148	-9.526**
6.	Market / Understanding Government Policy	3.171	0.3921	2	3.757	0.5529	6	0.586	-13.251**
7.	Entrepreneurial	2.986	0.5263	7	4.3	0.4770	2	1.314	-11.576**
	Total Mean	3.08			4.103				

R=Ranking of the competencies according to the calculated mean. M*= Mean difference calculated by the desired status mean – existing status mean, ES=Existing Status, DS=Desired Status, M=Mean, SD=Standard Deviation*

results, the following agricultural competencies for the desired status were ranked individually according to their calculated mean which indicated their importance in the descending order viz. communication/ICT (M = 4.395), entrepreneurial (M = 4.3), extension skills (M = 4.243), managerial (M = 4.2), personal (M = 4.109), market/understanding government policy (M = 3.757) and technical competency (M = 3.717).

The teachers emphasised more on the developing ability of PG students in writing good proposals for obtaining funds for research/business and skilful operating of Microsoft office and other statistical software, etc. as the need changes according to the level of the requirements. The entrepreneurial competency which was ranked at seventh position (M = 2.986; SD = 0.5263) in the existing status was found to acquire the second position (M = 4.3; SD = 0.4770) in the desired status of the competencies. The teachers emphasised developing entrepreneurial skills such as self-confidence, belief in the value of money, self-discipline, desire to start their own business, sense of responsibility, honesty, perseverance, persuasiveness, patience, the judgement of people, generosity, market awareness, etc. The extension skills competency which was ranked at sixth position (M = 2.992; SD = 0.4944) in the existing status was found to acquire the third position (M = 4.243; SD = 0.4423) in the desired status of the competencies. The significant difference indicated that the extension skills need to be developed more as they were found to be very low as compared to other competencies in the existing status. The lack of extensive extension services is a major factor in the poor dissemination of information to the farmers. The managerial competency acquired the fourth position in existing status and desired status both. There was a significant difference to be found in the managerial competency but the same position revealed that the teachers perceived that the PG students possessed a satisfactory level of managerial ability in them. The personal competency was found to be at the fifth position in the desired status with team spirit, problem-solving, leadership, Professionalism/Work Ethics and multi-tasking at first, second, third, fourth and fifth position within the personal competency respectively. The market and technical competency were placed at sixth and seventh position with a mean of 3.757 and 3.717, respectively.

The data in Table 3 revealed that all the teachers perceived that there was a severe deficit of teaching staff in the SAUs which grievously affected the quality of teaching as there are fewer teachers to take all classes. The less number of staff also increases the individual burden on the teachers for many different classes at a single time. Apart from taking classes, the staff is also involved in invigilation and evaluation tasks during examinations. According to the National Agricultural Education Project (NAEP) report 2012, only 65 per cent of the sanctioned faculty strength remains filled and over 50 per cent of universities have over 30 per cent vacant faculty positions. The average age of teaching faculty is around 50 years or higher. Although the universities have a bulk of valuable experience in the form of old-faculty with the scenario of non-recruitment of the new faculty, the universities are restricting creative and forward-looking innovative ideas of improving the content, context and pedagogy of education.

Regarding more number of students in every degree, a majority (75.71%) of the teachers agreed with this. The teachers mentioned that day by day the number of students is increasing who want to join professional courses such as agriculture and also that having more students eases the load on the management for procuring funds for the universities. All the teachers agreed that they were overburdened with work besides the job of teaching. The teachers also mentioned that presently most of the AUs are functioning in traditional ways that require manpower and time and that the teachers have to frequently step into these roles besides research, teaching and extension which increases their work and leads to inefficiency in teaching. Around 90 per cent of the teachers disagreed with the statement that there was a lack of willingness of teachers to teach. More than two-thirds of the teachers (85.72%) disagreed that they lacked the expertise to be a teacher, instead, they mentioned that they were well trained in teaching and also that time to time training and capacity building programmes for the faculty add to their strength of teaching. While on the other hand more than two-third of the teachers (88.57%) agreed that they faced the problem of lack of time to justify their teaching. The fixed syllabus and credit hours compelled them to go short on teaching and cover the surface knowledge only. The majority of the teachers (85.72%) disagreed that they had a casual approach towards teaching, instead, they felt that it is the students who have developed a casual approach towards learning and just want to pass the subjects instead of getting a comprehensive knowledge and understanding of the concepts. More than two-thirds of the teachers (77.14%) agreed that the content of the syllabus is usually more than the credit hours allotted to them. Less than two-thirds of the teachers (60%) agreed that they were unable to differentiate between research, teaching and extension and that it's difficult for them to give equal importance to all of them. The discussions with the teachers revealed that at present there is no distinction in the

Table 3. Factors affecting the quality of teaching

S.No.	Problems	Agree (%)	Disagree (%)
1.	Lack of teaching staff	100	—
2.	More number of students in every degree	75.71	24.29
3.	Overburdening of teachers	100	—
4.	Lack of willingness of teachers to teach	10	90
5.	Lack of expertise among the teachers	14.28	85.72
6.	Lack of time with the teachers to justify teaching	88.57	11.43
7.	Casual approach towards teaching	14.28	85.72
8.	Overloaded content as compared to credit hours	77.14	22.86
9.	Lack of distinction between research, teaching and extension	60	40
10.	Less emphasis on teaching in university as compared to research and extension	55.71	44.29

schemes viz. teaching, research and extension. The teachers may be in any scheme but it is expected that they fulfil all mandates. This does not let them justify the scheme they belong to. About 56 per cent of the teachers further agreed that there is less emphasis on teaching in the university as compared to research and extension because in recent times the promotion of teachers is usually attached with the papers published by them which can be done only by frequent research. Therefore, the teaching area suffers compared to research and extension.

Regarding the status of teaching overtime in the agricultural universities, the data presented in Table 4 revealed that a little more than 50 per cent of the teachers (52.86%) perceived that the status of the teaching was good while 47.14 per cent of them perceived that the teaching quality was only average and there are a lot of areas where it can be improved. During discussions with the teachers, they further added that quality of education in most of the agricultural universities is adversely affected due to shortage of teaching faculty, lack of motivation and opportunity for the development of faculty with time and space and the regional inbreeding. Certain disciplines like agricultural economics, agricultural meteorology, and agricultural statistics although integral to the curriculum, yet lack the required faculty in many institutions. The quality of students entering agricultural education has been gradually improving but is still below the mark which calls for making agricultural education more attractive, demand-driven and rewarding. The factors affecting the quality are discussed further in the report. When asked the teachers regarding the quality of evaluation of the students, more than two-thirds of the teachers (77.14%) mentioned that they were fair in their evaluation while 22.86 per cent felt compromised in their evaluation of the students as presented in Table 4.

The teachers (22.86%) who expressed that they have to compromise their evaluation further mentioned the different factors affecting their evaluation. It was interesting to note that 62.5 per cent of the teachers agreed that the students were too incompetent and if they were to be repeated, they would perform the same as presented in Table 5. This incompetency of the students forces

the teachers to usually pass them to avoid the facade of getting insulted and harassed by the student repeatedly.

More than two-thirds of the teachers (75%) agreed that they usually have very little time for fair evaluation as each teacher often has many subjects for evaluation owing to lack of staff and the submission of grades have to be done within a very short period which leads to lack of fair evaluation of the students and their grades. The majority of the teachers (87.5%) agreed that the lack of staff was also one of the major factors affecting the fair evaluation of students as the teachers have to go through the same paper two or three times and the presence of sufficient staff can ease the load.

A little more than two-thirds of the teachers (68.75%) agreed that overburdening of the existing staff with various university activities doesn't allow them to justify fair evaluation causing compromised evaluation of the students as the staff is more oriented towards completion of the given work. Less than two-thirds of the teachers (62.5%) agreed that the strength of the students was more concerning the number of teachers. A single teacher having courses in UG, PG and PhD programme and often involved in invigilation as well on evaluation of exams which are time-bound activities has little option left. While 75 per cent of them disagreed that they have a soft corner for the students who fail, an equal percentage of teachers i.e. (12.5%) agreed to this or were neutral about it.

CONCLUSION

Agriculture is changing, and with it, a revised set of competencies is needed to address new challenges in agriculture. As attitudes, expectations, and employment in agriculture have changed, there is evidence that the skills and competencies of graduates do not meet the needs of today's agricultural sector. The "new professional" should, for example, be better able to work across different disciplines and in partnership with different stakeholders, understand the value chain and potential for profit and entrepreneurship at different stages. With increased attention to holistic and multi-disciplinary approaches to addressing challenges, agricultural professionals are expected to be able to integrate knowledge and practices from outside of their discipline and work within the multi-functionality of agriculture. As we move away from 'business as usual' we must integrate this new way of thinking into educational institutions and agricultural curricula.

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Table 4. Status of quality of teaching

Status of quality of teaching over time in agricultural universities	Good	37	52.86
	Average	33	47.14
	Poor	—	—
Quality of Evaluation	Fair	54	77.14
	Compromised	16	22.86

Table 5. Factors affecting the quality of evaluation (compromised) (n=16)

S.No.	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Students are too incompetent and if they are repeated, they will perform the same	—	62.5	—	37.5	—
2.	Lack of staff for a fair evaluation	—	87.5	—	12.5	—
3.	Lack of time for a fair evaluation	12.5	75	—	2.5	—
4.	Overburdening of the existing staff to justify the fair evaluation	6.25	68.75	25	—	—
5.	The strength of students is more	31.25	62.5	6.25	—	—
6.	Soft corner for the students who fail	—	12.5	12.5	75	—

Data is represented in percentages to the total

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